IN THE CLAIMS:

Without prejudice, please cancel original claims 1 to 16, and please add new claims 17 to 32 as follows:

17. (New) A method for determining at least one of hematocrit and blood volume during an extracorporeal blood treatment with an extracorporeal blood circuit, comprising the steps of:

taking blood with a blood pump via an arterial cannula and an arterial line;

feeding the blood back via a venous line and a venous cannula;

measuring the pressure in the extracorporeal blood circuit;

determining a change in the hematocrit from a change in the pressure; wherein the respective relationship between hematocrit HKT or blood volume RBV and pressure P in the extracorporeal circuit is stored for various cannula diameters and various blood-flow values, and the respective relationship is selected for the given cannula diameter and blood flow, and the hematocrit and/or blood volume is determined in accordance with the selected relationship.

18. (New) The method according to claim 17, wherein the pressure P_{art} in the arterial flexible-tube line is measured upstream of the blood pump.

19. (New) The method according to claim 17, wherein, in order to determine the cannula diameter, the change in the pressure resulting from a change in the blood flow is determined and the cannula diameter is determined from the change in the pressure.

20. (New) The method according to claim 19, wherein the pressures P_{art1} and P_{art2} are measured at at least two different values of the blood flow in each case and the difference $\Delta P_{art} = P_{art1} - P_{art2}$ calculated from the pressures P_{art1} and P_{art2}, whereby the difference ΔP_{art} is compared with predetermined value ranges representative of the individual cannula diameters in order to determine the cannula diameter.

21. (New) The method according to claim 17, wherein the relationship between hematocrit or blood volume and pressure for various diameters of the cannula and various values of the blood flow is described by a non-linear function.

22. (New) The method according to claim 17, wherein the pumping rate BPR of the blood pump is determined in order to determine the blood flow.

23. (New) The method according to claim 17, wherein the blood volume RBV is determined from the hematocrit HKT.

24. (New) The method according to claim 23, wherein the blood volume RBV is calculated at a specified time t of the blood treatment from the product HKT (t_0) RBV (t_0) of the hematocrit HKT (t_0) at a preceding time t_0 and the blood volume RBV (t_0) at a preceding time t_0, divided by the hematocrit HKT(t_0) at the specified time t.

25. (New) An apparatus for extracorporeal blood treatment with an extracorporeal blood circuit, comprising:

a blood pump;

an arterial cannula and an arterial line for taking blood;

a venous cannula and venous line for feeding back blood;

a device for determining the hematocrit and/or blood volume, the device having:

a pressure sensor for measuring the pressure in the extracorporeal circuit and a memory and evaluation unit configured such that a change in the hematocrit or blood volume is deduced from a change in the pressure, wherein the respective relationship between hematocrit HKT or blood volume RBV and pressure P in the extracorporeal circuit is stored for various cannula diameters and various blood-flow values in the memory and evaluation unit, and wherein the memory and evaluation unit is configured such that the appropriate relationship is selected for the respective cannula diameter and blood flow and hematocrit and/or blood volume is determined in accordance with the selected relationship.

26. (New) The apparatus according to claim 25, wherein the pressure sensor is arranged in the arterial blood line upstream of the blood pump.

27. (New) The apparatus according to claim 25, wherein the memory and evaluation unit is configured such that, in order to determine the cannula diameter, the change in the arterial pressure resulting from a change in the blood flow is determined and the cannula diameter is determined from the change in the arterial pressure.

28. (New) The apparatus according to claim 27, wherein the memory and evaluation unit is configured such that the pressures P_{art1} and P_{art2} are measured at at least two different values of the blood flow in each case and the difference $\Delta P_{art} = P_{art1} - P_{art2}$ calculated from the pressures P_{art1} and P_{art2}, whereby the difference ΔP_{art} is compared with predetermined value ranges representative of the individual cannula diameters in order to determine the cannula diameter.

29. (New) The apparatus according to claim 25, wherein the memory and evaluation unit is configured such that the relationship between hematocrit HKT or blood volume RBV and pressure for various cannula diameters and various blood-flow values is described by a non-linear function.

30. (New) The apparatus according to claim 25, wherein the memory and evaluation unit is designed in such a way that the pumping rate BPR of the blood pump is determined in order to determine the blood flow.

31. (New) The apparatus according to claim 25, wherein the memory and evaluation unit is configured such that the blood volume RBV is determined from the hematocrit HKT.

32. (New) The apparatus according to claim 31, wherein the memory and evaluation unit is configured such that the blood volume RBV is calculated at a specified time t of the blood treatment from the product HKT (t_0) RBV (t_0) of the hematocrit HKT (t_0) at a

preceding time t_0 and the blood volume RBV (t_0) at a preceding time t_0, divided by the hematocrit HKT (t_0) at the specified time t.